



# Operator Training



## Toro® Groundsmaster® 4000 Series Radiator Cleaning

**A**ll equipment benefits from frequent cleaning and maintenance, and that holds true for the Toro® Groundsmaster® 4000 Series mowers (4000-D, 4100-D, 4500-D, 4700-D). This family of mowers incorporates significant improvement in operator comfort by drawing the air for the cooling system from the rear of the mower. Noise is greatly reduced for operators. This advantage requires attentive radiator cleaning by the operators. The air flow in the 4000 Series comes through the rear of the machine, through the screen, through the oil cooler, through the radiator and out the bottom of the unit. All of these areas need to be kept clean to function properly.

Cleaning the cooling systems will assure optimum performance and engine life, and should be done daily. These cleaning procedures are outlined in detail in the Operator's Manual, but here is a quick checklist that will help you keep these vital components clean.

### Cooling System Cleaning Checklist:

- Engage the parking brake, stop the engine and remove the key from the switch.
- Brush off the rear screen thoroughly to eliminate chaff and debris.
- Open the hood or swing out the screen by unlatching the clips on each side.
- Remove the retaining nuts that hold the oil cooler, then tilt the oil cooler back to access the radiator.
- Using an OSHA-compliant extended air nozzle that can reach into the radiator, blow the debris out from the fan side of the radiator first. Do a thorough job, making sure to clean the corners, bottom half and center of the radiator. These are the spots that are most often missed or overlooked.

- Once the debris has been cleaned out from the fan side of the radiator, blow out debris from the cooler side of the radiator towards the fan then use your air nozzle to remove the rest of the debris from the oil cooler side of the radiator. Again, make sure to clean the corners, bottom and the center section. In dirty, dusty conditions, you may need to clean the radiator more than once throughout the day to ensure the cooling system is operating at peak performance.

- After the radiator and oil cooler have been cleaned, reinstall the oil cooler and fasten it with the retaining nuts.

- Finally, use compressed air to blow any remaining chaff and debris from the backside of the radiator screen and the hood area.

*(Note: On the Groundsmaster 4000-D and 4100-D, remove the lower panel to clean the bottom of the radiator area.)*

### Alternator Belt

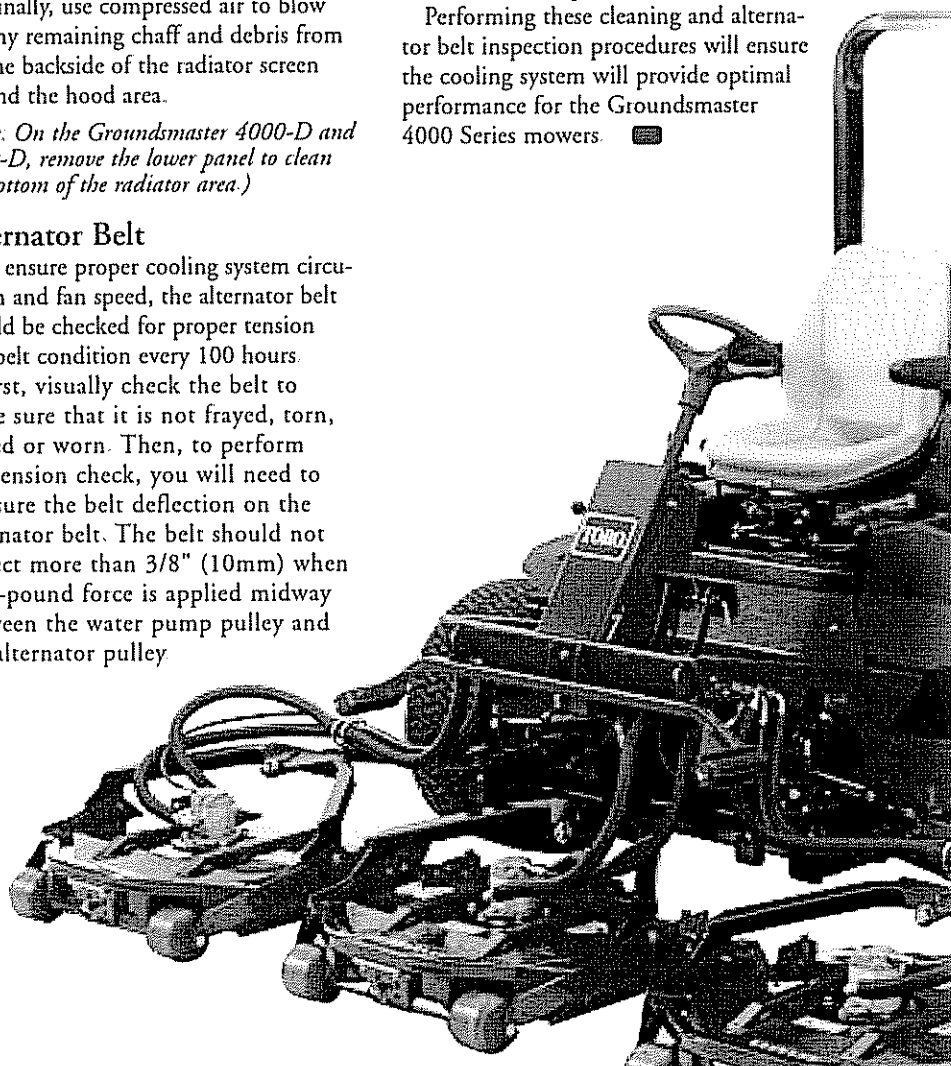
To ensure proper cooling system circulation and fan speed, the alternator belt should be checked for proper tension and belt condition every 100 hours.

First, visually check the belt to make sure that it is not frayed, torn, glazed or worn. Then, to perform the tension check, you will need to measure the belt deflection on the alternator belt. The belt should not deflect more than 3/8" (10mm) when a 10-pound force is applied midway between the water pump pulley and the alternator pulley.

Another method to check the alternator belt tension is the 13 mm wrench check. Place the 13 mm wrench on one of the clutch fan water pump retaining bolts (these are the bolts that hold the fan hub to the water pump). Apply a slight amount of pressure on the wrench in a clockwise direction—or towards the alternator. Applying pressure in this direction will ensure that you do not loosen any of the bolts.

If you cannot turn the hub itself with the wrench, then the alternator belt for the cooling fan is tight enough to properly cool the system. If the fan hub turns, the belt needs to be tightened or replaced. These procedures are also detailed in the Operator's Manual.

Performing these cleaning and alternator belt inspection procedures will ensure the cooling system will provide optimal performance for the Groundsmaster 4000 Series mowers. ■





# Capacitación de Operadores

## Limpieza del radiador en la Serie Groundsmaster® 4000 de Toro®

**L**a limpieza y el mantenimiento frecuentes benefician a cualquier equipo, y eso se aplica también a las cortadoras de la Serie Groundsmaster® 4000 de Toro® (4000-D, 4100-D, 4500-D, 4700-D). En esta familia de cortadoras se ha mejorado significativamente la comodidad del operador mediante la extracción de aire de enfriado por la parte trasera de la cortadora. Así se reduce mucho el ruido para los operadores. Esta característica requiere que los operadores limpien cuidadosamente el radiador. En la Serie 4000 el aire fluye por la parte trasera de la máquina, atravesando la malla, el enfriador de aceite y el radiador hasta salir por el fondo de la unidad. Todas estas áreas deben mantenerse limpias para que el sistema funcione bien.

La limpieza de los sistemas de enfriamiento servirá para asegurar un funcionamiento óptimo y mayor duración del motor, y debe hacerse diariamente. Aunque estos procedimientos de limpieza se describen con detalle en el manual de instrucciones, aquí le damos una lista de

verificación que le ayudará a mantener limpios estos componentes vitales.

### Lista de verificación del sistema de enfriamiento:

- Ponga el freno de estacionamiento, pare el motor y quite la llave del interruptor de encendido.
- Cepille toda la malla trasera para eliminar la paja y demás residuos.
- Abra la cubierta del motor o malla destrabando los broches laterales.
- Quite las tuercas que sujetan el enfriador de aceite, luego incline hacia atrás el enfriador de aceite para tener acceso al motor.
- Usando una extensión con boquilla que cumpla con las normas de OSHA y suficientemente larga para entrar al radiador, sople los residuos por el lado del ventilador primero. Limpie completamente por las esquinas, la mitad inferior y el centro del radiador. Estos son los lugares que más a menudo se dejan sin limpiar.
- Una vez que haya sacado los residuos del lado del ventilador del radiador, sople desde el lado del enfriador hacia el lado del ventilador y luego dirija la boquilla hacia el enfriador de aceite para eliminar el resto de los residuos. Recuerde limpiar por las esquinas, el fondo y el centro. En lugares polvorientos probablemente necesitará limpiar el radiador más de una vez al día para asegurar el funcionamiento óptimo de su sistema de mantenimiento.
- Después de limpiar el radiador y el enfriador de aceite, vuelva a instalar el enfriador de aceite y fíjelo con sus tuercas.
- Finalmente, sople con aire comprimido la paja y demás residuos que queden por el reverso de la malla y por la cubierta del motor.

*(Nota. En los modelos Groundsmaster 4000-D y 4100-D se quita la tapa inferior para limpiar el área más baja del radiador.)*

### Correa del alternador

Para asegurar buena circulación y adecuada velocidad del ventilador, cada 100 horas de trabajo debe revisarse la correa del alternador, verificando su tensión y su condición física.

Primero, revise visualmente la correa para asegurarse que no esté deshilachada, rasgada, vidriada o desgastada. Luego, para verificar la tensión, tendrá que medir la deflexión en la correa del alternador. La correa no debe tener una desviación mayor de 3/8" (10mm) cuando se le aplique una fuerza de 10 libras (4.5 kg) a la mitad entre la polea de la bomba de agua y la polea del alternador.

En otro método para verificar la tensión de la correa del alternador se usa una llave de tuercas de 13 mm. Coloque la llave de 13 mm en uno de los pernos que fijan el ventilador de embrague a la bomba de agua. Aplique una presión leve sobre la llave en el sentido de las manecillas de un reloj, hacia el alternador. Si aplica presión en esa dirección, no aflojará ninguno de los pernos.

Si no puede girar el centro del ventilador con la llave, la correa del alternador para el ventilador de enfriamiento tiene la tensión necesaria para enfriar adecuadamente el sistema. Si el centro del ventilador gira, debe apretar o cambiar la correa. Estos procedimientos se detallan también en el manual de instrucciones.

Con estos procedimientos de limpieza y revisión de la correa del alternador, podrá asegurar un funcionamiento óptimo del sistema de enfriamiento en las cortadoras de la Serie Groundsmaster 4000.



**TORO**

# Toro® Hydroject® Greens Aerator

*Back Where It Belongs*

**A**sk any golf course superintendent if it's important to aerify, and chances are, they will say yes. But then what? How often should you aerate? How deep? What kinds of tines?

It's easy to identify the benefits of aerating. First, it relieves compaction to assist the exchange of oxygen and carbon dioxide in the soil. Aerification creates channels for moisture and nutrients to strengthen turfgrass roots. Aerification

your putting surface. Golfers don't want that disruption."

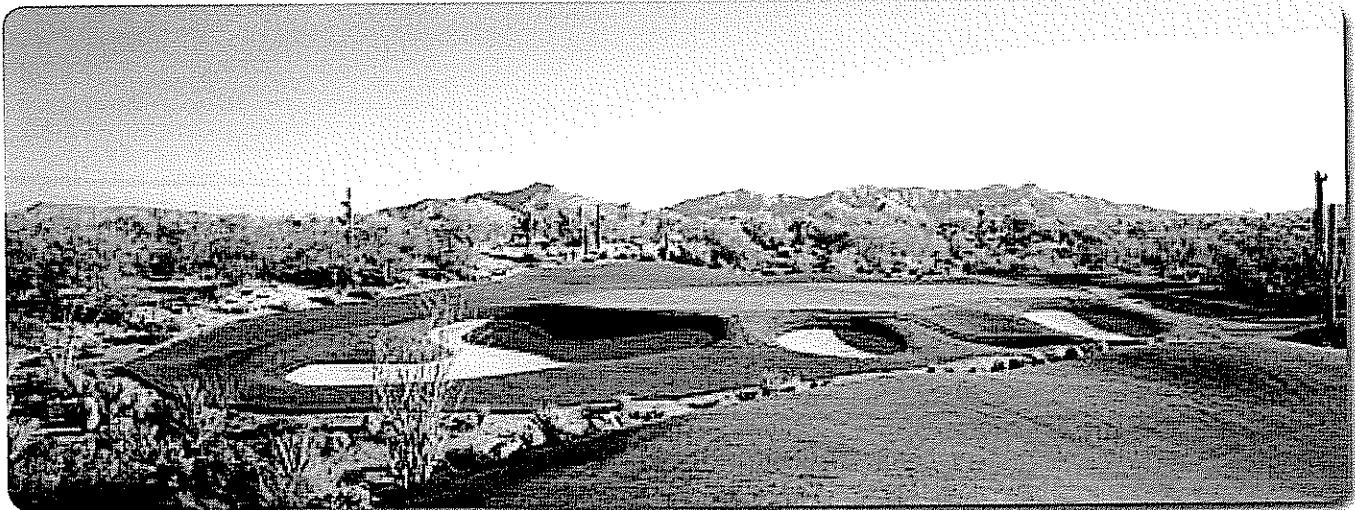
Dr. Duncan, the developer of the well-known Seashore Paspalum turfgrass and four different cultivars, is an expert on growing turfgrass. He is also a staunch advocate of aerification.

"It's extremely important for the performance of the turf," he says, "but it's a mental adjustment for some people, because of the complaints they get from golfers. I spend a lot of time with boards

ering moisture, oxygen and nutrients to the turfgrass root system, but in a cleaner and more effective way.

The Hydroject nozzles are actually much longer than regular aerating tines and can go as far as 8" deep. That enables you to blast through the "hard pan" layer of compaction beyond the reach of traditional spiking.

"It's just a great way to be aerifying," says Cliff Frink, Golf Course Superintendent at the Legend Trail Golf Club in North Scottsdale, Arizona. "We'll aerify greens



Cliff Frink frequently uses the Toro® Hydroject® on his greens at Legend Trail Golf Club in Scottsdale Arizona with spectacular results

also helps break up thatch layers, stimulate microbial action and modify soil composition.

Yet after agreeing on WHY to aerate, many superintendents have different ideas about when and how. For one thing, each course is essentially its own microclimate, so aeration needs will differ by soil, water quality, grass types and so on. Then there's the issue of disturbing the playing surface.

"That's the number-one complaint from the players, about holes poked in the soil and on the greens," says independent agronomy consultant Ron Duncan, Ph.D. "You can stand to have a large core aeration out on fairways or the approaches, and even get away with it on tees, but on the greens it's a different situation. That's extreme, because it affects

and greens committees explaining why these things have to be done."

## Hydroject®: A Solution To The Problem

So on one hand you have the critical need to aerify your greens; on the other is the risk of angering golfers. What's the answer? It's the Hydroject® from Toro.

The Toro Hydroject 3010 is a unique water-injection aerator that provides the benefits of aerifying without disrupting the playing surface. Instead of drilling holes and pulling cores, the Hydroject uses a series of narrow, stainless steel nozzles—about the size of thin pencil tines—to shoot pressurized water into the ground. That achieves the critical aerification steps of loosening the soil and deliv-

with the Hydroject maybe twelve times a year. We can do it more frequently because it's so non-disruptive. You can run the Hydroject as often as you like, and the players don't know the difference."

## Maintaining High Standards

Legend Trail is a first-class, 18-hole public course which Golf Digest ranked #15 among the best courses in Arizona, and it was on Golf magazine's list of the Top 100 public facilities in America. Designed by Reese Jones, the course features 3.5 acres of beautiful bentgrass greens—in a desert climate with year-round play—and its golfers expect the best. The Toro Hydroject helps.

"We definitely see the results from it," Frink continues, "and I like the option to